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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/982,928	10/22/2001	Steven M. Knowles	10765-015001	8524

26171 7590 09/16/2002

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EXAMINER

MACARTHUR, VICTOR L

ART UNIT	PAPER NUMBER
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3679

DATE MAILED: 09/16/2002

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/982,928

Applicant(s)

KNOWLES, STEVEN M. 

Examiner

Victor MacArthur

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 30-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-29, drawn to a flexible joint assembly, classified in class 403, subclass 56.
- II. Claims 30-40, drawn to process for using a flexible joint assembly, classified in class 403, subclass 410.

Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product disclosed in claims 1-29 could be used in a process other than the process disclosed in claims 30-40. For instance, a process using fluid pressurized between 0 and 200 PSI.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Harold Fox on 09/06/02 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-29. Affirmation of this election must be made by applicant in replying to this Office action. Claims 30-40 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

Claims 21-27 are objected to because they include reference characters which are not enclosed within parentheses.

Reference characters corresponding to elements recited in the detailed description of the drawings and used in conjunction with the recitation of the same element or group of elements in the claims should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. See MPEP § 608.01(m).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 21-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 21 and 23, the limitation "the respective of the joint assembly" is recited in line 10 of claim 21 and line 11 of claim 23. There is insufficient antecedent basis for this limitation in the claim. If the meaning of respective is taken as "in the order given" it should be noted that no clear order, pertaining to this phrase, is previously cited in the claims. If the meaning of respective is taken as "separately" it should be noted that the claims have not previously cited which, if any, elements should be regarded as separate from one another. Further, the phrase "a sealing member sealing the inner member to the receiving member at a distance of less than 14% of the dimension from the respective pivot" is recited in line 14 of claim 21. It is unclear what "at a distance" is in respect to. Also it is unclear where "the

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dimension” extends since only one reference point is given —“the respective pivot”. Claim 22 depends from rejected claim 21 thereby rendering this dependent claim indefinite. Claims 24-27 depend from rejected claim 23 thereby rendering these dependent claims indefinite.

As to claims 21-27, the claims are unclear since they rely on reference character “D”. The applicant is reminded that, while reference characters are allowable within the claims, the claim language should particularly point out and distinctly claim the subject matter without having to refer to the drawings via reference characters.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4776617 to Sato (see marked up copy).

Regarding claims 1, 11 and 12, Sato discloses (figs.8 and 9) a flexible joint assembly for conducting a fluid, comprising: a joint assembly inlet (201a); a joint assembly outlet (201b); and a fluid flow path between the inlet and the outlet, the fluid flow path including: a first pivot joint (200a); a second pivot joint (200b); and a central fluid conductor (202a, 202b) fluidly coupling the pivot joints, wherein the pivot joints together appear to be capable of providing greater than 60° bend between the inlet and the outlet. Sato does not explicitly disclose that the pivot joints together provide greater than a 60° bend; however, a greater than 60° bend is within the scope of Sato’s disclosure. Further, applicant is reminded that it has generally been recognized that the

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optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961). Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to optimize the proportion of the bend of Sato's pivot joints together to be greater than 60° as such practice is a design consideration within the skill of the art.

As to claim 2, Sato discloses the flexible joint assembly of claim 1 wherein each of the first pivot joint and second pivot joint independently comprises a ball and socket joint.

As to claim 3, Sato discloses the flexible joint assembly of claim 2 wherein each ball and socket joint comprises: a socket (300); a ball (200a) received in the socket; and a seal (300) between the ball to the socket.

As to claim 4, Sato discloses the flexible joint assembly of claim 3 wherein each ball and socket joint further comprises a compressing member (400) axially compressing the seal between the ball and the socket.

As to claim 5, Sato discloses the flexible joint assembly of claim 4 wherein each compressing member comprises a retaining ring (ring portion of 40 in contact with seal (300) compressing the seal between the ball and the socket.

As to claim 6, Sato discloses the flexible joint assembly of claim 1 wherein the central fluid conductor couples to the first ball of the first pivot joint and a second ball of the second pivot joint.

As to claim 7, Sato discloses the flexible joint assembly of claim 1 wherein the first pivot joint and the second pivot joint together appear to be capable of providing a substantially 90° bend between the inlet and the outlet. Sato does not explicitly disclose the bend as being exactly

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90°; however, a 90° bend is within the scope of Sato's disclosure. Further, applicant is reminded that it has generally been recognized that the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961). Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to optimize the proportion of the bend of Sato's pivot joints together to be 90° as such practice is a design consideration within the skill of the art.

As to claim 8, Sato discloses the flexible joint assembly of claim 1. Sato does not disclose the central fluid conductor as being unitary. It has generally been recognized that one-piece construction, in place of separate elements fastened together, is a design consideration within the skill of the art. In re Kohno, 391 F.2d 959, 157 USPQ 275 (CCPA 1968); In re Larson, 340 F.2d 965, 144 USPQ 347 (CCPA 1965). Accordingly, it would have been obvious to one of ordinary skill in the art to modify the central fluid conductor disclosed by Sato to be one piece as such practice is a design consideration within the skill of the art.

As to claim 9, Sato discloses the flexible joint assembly of claim 1. Sato does not explicitly disclose the central fluid conductor as being shorter than 10 centimeters; however, a conductor shorter than 10 centimeters is within the scope of Sato's disclosure. Further, applicant is reminded that it has generally been recognized that the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961). Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to optimize the proportion of the central fluid conductor of Sato to be shorter than 10 centimeter as such practice is a design consideration within the skill of the art.

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As to claim 10, Sato discloses the flexible joint assembly of claim 1 wherein the joint assembly inlet and the joint assembly outlet include a fitting.

As to claim 13, Sato discloses a flexible joint assembly comprising: a joint assembly inlet (201a); a joint assembly outlet (201b); and a fluid flow path between the inlet and the outlet, the fluid flow path including: a first pivot joint (200a); a second pivot joint (200b); and a central fluid conductor (202a, 202b) fluidly coupling the pivot joints, each of the first pivot joint and second pivot joint including: an inner member (ball portion of 200a); a receiving member (203a) dimensioned to pivotally receive at least part of the inner member; a sealing member (300) sealing between the inner member and the receiving member; and a supporting member (400) supporting the sealing member substantially uniformly over the entire length of the seal between the inner member and the receiving member.

As to claim 14, Sato discloses the flexible joint assembly of claim 13 wherein each sealing member comprises an annular seal having a first surface.

As to claim 15, Sato discloses the flexible joint assembly of claim 14 wherein each supporting member comprises an annular support (portion of 400 in contact with seal 300) having a second surface configured to mate with the first surface of the annular seal thereby supporting the annular seal substantially uniformly.

As to claims 16 and 17, Sato discloses the flexible joint assembly of claim 13 wherein: each receiving member comprises a first engagement surface (thread containing surface of 203a); and each supporting member comprises a second engagement surface (thread containing surface of 400), wherein the first engagement surface is configured to engage the second engagement

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surface to maintain a fixed relative position between the receiving member and the supporting member.

As to claim 18, Sato discloses the flexible joint assembly of claim 13. Sato does not explicitly disclose each sealing member as being comprised of an elastomeric material; however, an elastomeric material is within the scope of Sato's disclosure. Further, applicant is reminded that it has generally been recognized that selection of a known material based upon its suitability for the intended use is a design consideration within the skill of the art. In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). The use of elastomeric materials for seals is well known. Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to use an elastomeric material to construct the seal of Sato as such practice is a design consideration within the skill of the art.

As to claim 19, Sato discloses the flexible joint assembly of claim 13 wherein: each inner member comprises a ball; each receiving member comprises a socket; and each sealing member comprises an O-ring sealing the ball to the socket.

As to claim 20, Sato discloses the flexible joint assembly of claim 19 wherein the O-ring has an inner diameter greater than 90% of the diameter of the ball.

As to claim 21, Sato discloses a flexible joint assembly comprising: a joint assembly inlet (201a); a joint assembly outlet (201b); and a fluid flow path between the inlet and the outlet, the fluid flow path including: a first pivot joint (200a) configured to pivot about a first pivot (center of 200a); a second pivot joint (200b) configured to pivot about a second pivot (center of 200b); and a central fluid conductor (202a, 202b) fluidly coupling the first pivot joint and the second pivot joint, each of the first pivot joint and the second pivot joint including: an inner member

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(ball portion of 200a, 200b) having a dimension in a direction substantially normal to a path through the respective of the joint assembly inlet and outlet; a receiving member (203a, 203b) dimensioned to receive at least part of the inner member; and a sealing member (300) sealing the inner member to the receiving member.

As to claim 22, Sato discloses the flexible joint assembly of claim 21 wherein: the first pivot is a pivot point; the second pivot is a pivot point.

As to claim 23, Sato discloses the flexible joint assembly as discussed above wherein the fluid flow path includes: a first pivot joint configured to pivot over a first arc about a first pivot; a second pivot joint configured to pivot over a second arc about a second pivot; and a central fluid conductor fluidly coupling the pivot joints, each of the first pivot joint and second pivot joint including: a received joint member having a dimension in a direction substantially normal to a path; and a receiving joint member dimensioned to pivotally receive at least part of the received joint member, wherein: either the received joint member is coupled to one of the joint assembly inlet and the joint assembly outlet and the receiving joint member is coupled to the central fluid conductor, or the receiving joint member is coupled to one of the joint assembly inlet and the joint assembly outlet and the received joint member is coupled to the central fluid conductor; and a contact point between each receiving joint member and the central fluid conductor whereby the pivot joint is fully pivoted over the respective arc.

As to claims 24 and 25, Sato discloses the flexible joint assembly of claim 23 wherein each receiving joint member extends less than 30% of a dimension. Note that reliance on reference character "D" (see 112 rejection above) renders the claim language broad enough to encompass any arbitrary dimension.

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As to claim 26, Sato discloses the flexible joint assembly of claim 23 wherein each of the first pivot and the second pivot is a pivot point.

As to claim 27, Sato discloses the flexible joint assembly of claim 23 wherein each receiving joint member: is coupled to one of the joint assembly inlet and the joint assembly outlet; and defines a chamber in communication with the central fluid conductor, the chamber being dimensioned to subsume an at least 115° arc about the respective pivot.

As to claim 28, Sato discloses a flexible joint assembly as discussed above. Sato does not explicitly state what pressures the joint is configured to withstand; however, pressures of 200 to 5000 PSI are within the scope of Sato's disclosure. Further, applicant is reminded that it has generally been recognized that the optimization of proportions in a prior art device is a design consideration within the skill of the art. In re Reese, 290 F.2d 839, 129 USPQ 402 (CCPA 1961). Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to optimize the proportion (thickness of elements) of the joint of Sato to allow for pressures of 200 to 5000 PSI as such practice is a design consideration within the skill of the art.

As to claim 29, Sato discloses the flexible joint assembly of claim 28 as discussed above wherein each of the first ball and socket joint and second ball and socket joint comprises: a sealing member between the ball and the socket; and a supporting member (400) contacting the sealing member substantially uniformly over the entire length of the seal between the ball and the socket.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Referring to fluid carrying ball and socket joints :

USPN 6299217 to Saito et al.;

USPN 6237965 to Kuo;

USPN 6056329 to Kitani et al.;

USPN 6257625 to Kitani et al.; and

USPN 6273476 to Ikeda et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor MacArthur whose telephone number is (703) 305-5701. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Browne can be reached on (703) 308-1159. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9326 for regular communications and (703) 872-9327 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.



VLM
September 10, 2002



Lynne H. Browne
Supervisory Patent Examiner
Technology Center 3600

Attachment: one marked up copy of USPN 4776617 to Sato

FIG. 8
Prior Art

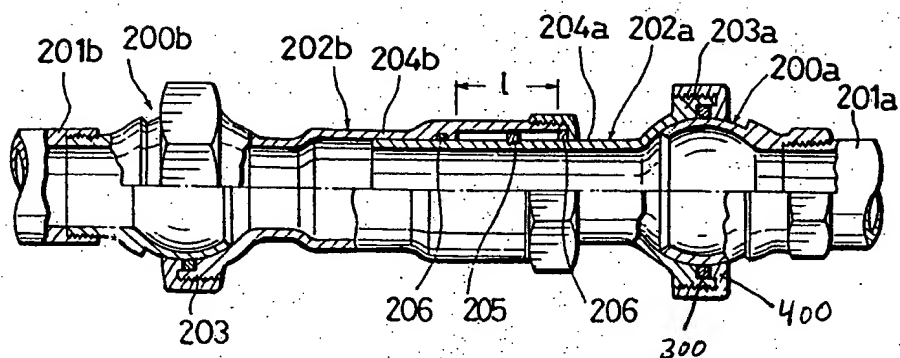


FIG. 9
Prior Art

